Customer Success Story:
City of Ruston, Louisiana, U.S.A.

Market segment
Utility

Eaton's advanced metering solution supports a smarter grid in Ruston, Louisiana

Location:
Ruston, Louisiana

Challenge:
Implement two-way advanced metering infrastructure for electric and water systems to improve overall municipal utility service, minimize losses and optimize labor efforts

Solution:
Eaton's Cooper Power™ series Advanced Metering Infrastructure (AMI) and Yukon™ enterprise software platform enables enhanced consumption monitoring, customer service and outage management

Results:
Accurate, real-time electric and water consumption information along with extensive tools to reduce utility losses, minimize labor and increase overall system reliability

"We realized the AMI system would allow us to achieve much more accurate meter reading with a fraction of the required time and labor, along with the added ability to access real-time usage data within seconds."

*Darrell Caraway,
public works director, city of Ruston*

Background

Ruston, located in Lincoln Parish between Shreveport and Monroe in north Louisiana, is home to more than 20,000 residents and two major universities. The city provides utility coverage over approximately 16 square miles, managing about 10,600 electric meters and 8,800 water meters.

Ruston's Light & Power department strives to provide reliable and economical service for its citizens while meeting the city's unique needs and objectives. Part of this commitment is providing high-quality power to support its higher education communities, which are home to many high-tech biomedical and engineering laboratories.

Challenge

In 2008, the city of Ruston began to explore new technologies to improve utility operations and customer service. Before beginning the project, Ruston identified an estimated electricity loss of 10.8% in 2006, which increased to 10.9% in 2007. This translated into approximate losses of $1.4M in 2006 and $1.8M in 2007.

The city also recognized its electric and water distribution systems were aging and reliability began to decline as a result. Additionally, the older equipment lacked modern communication capabilities, which required personnel to perform the costly and time-consuming process of visiting each meter individually to support monthly billing cycles.

The city used a thorough process to evaluate available solutions that would meet its goals of reducing losses, improving customer service and minimizing labor expenses. At the time, advanced metering infrastructure (AMI) technology was evolving tremendously and Ruston sought to understand the benefits it could reap by adopting these solutions.

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Following a successful pilot program across more than 1,000 metering points, the city of Ruston received a Smart Grid Investment Grant (SGIG) award to help support a grid modernization project. The centerpiece of the project would be to install citywide AMI system as well as an integrated meter data management (MDM) system.

The MDM system would be closely integrated with the AMI system to enable smart grid capabilities, including data integration, aggregation, electrical load profiling, centralized data storage and loss analysis.

In tandem with the electrical system upgrades, Ruston would add the AMI and MDM capabilities to its water distribution system. Once completed, the comprehensive project would significantly enhance the city's remote monitoring, diagnostic and troubleshooting capabilities across all service areas, while improving overall system reliability.

"In the past, we relied on an entire team of meter readers to collect handwritten data on utility consumption," said Darrell Caraway, public works director for the city of Ruston. "Following the pilot program, we realized the AMI system would allow us to achieve much more accurate meter reading with a fraction of the required time and labor, along with the added ability to access real-time usage data within seconds to resolve customer issues."

AMI Disconnect Meter

Solution

As a result of the success of the initial pilot program, the city chose to move forward with Eaton's Cooper Power series best-in-class two-way RF mesh network as the foundation of its smart grid. Eaton was selected to support the project because of its large feature set, breadth of product offering, compatibility with multiple meter manufacturers and proven AMI technology.

The first stage of the project involved installation of Eaton's Cooper Power series Yukon™ enterprise software platform. Next, the smart grid network infrastructure was deployed throughout the city's service territory, including installation of intelligent electric meters for all customers served by the city of Ruston. The license-free 900 MHz mesh network provides an integrated solution for meter reading, as well as demand response and distribution automation. This enables real-time support on one network for electric, water and gas meters; load control switches; and distribution automation controls.

AMI Gateway

Eaton's Yukon software is an innovative, flexible and intelligent platform that is scalable for all types of deployments and supported by a full-time team of dedicated personnel. The system can be configured to provide Ruston with reports on consumption in hourly increments, providing data that can be used by employees to monitor and maintain the city's electric and water grids. Additionally, this information can be accessed within seconds to simplify billing and address potential issues with Ruston's residential and commercial customers.

The system allows users across all areas of the utility to take advantage of its data acquisition and analysis capabilities. Specific features of Eaton's solution allow Ruston to:

- Monitor voltage conditions in real-time
- Quickly identify outages or unusual usage patterns
- Complete detailed outage analyses
- Reduce labor and time when logging usage data
- Remotely connect and disconnect service locations
- Improve accuracy of billing

Results

Electric and water services for Ruston were greatly enhanced by using Eaton's Cooper Power series AMI technology for real-time monitoring and control of its distribution systems.

After completing the electrical side of the project, the city of Ruston has already leveraged the real-time intelligence to drive a series of results, including 4 percent less energy loss through the distribution grid, an energy use reduction of 5 percent for its customer base, a 50 percent reduction in distribution interruptions and an estimated community cost savings of $5.2 million. In addition to the reduced electrical losses and cost savings, the upgrades are paying dividends for Ruston's workforce.

"The impact has been enormous in our higher education communities, which are a major economic driver for city," said Caraway. "With a rental base of nearly 55 percent and high housing turnover each month, the ability to perform remote disconnects and readings has saved hundreds of trucks from going out each month – allowing our teams to focus their time on the continual improvement of utility services."

In addition, the new system is providing the Light & Power department with real-time alarm system detection, so the city can be immediately made aware of system outages and voltage fluctuations. This capability allows the utility to quickly identify the cause of local outages and troubleshoot potential issues before sending out maintenance teams.

To complement the newly upgraded electric AMI network, Ruston has made great progress implementing the new AMI system across its water infrastructure. So far, more than 1,200 meters have been replaced, with plans for the entire upgrade to be completed within the next two years.

To learn more, visit Eaton.com/utility

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